

High-throughput measurements

- Critical Issues

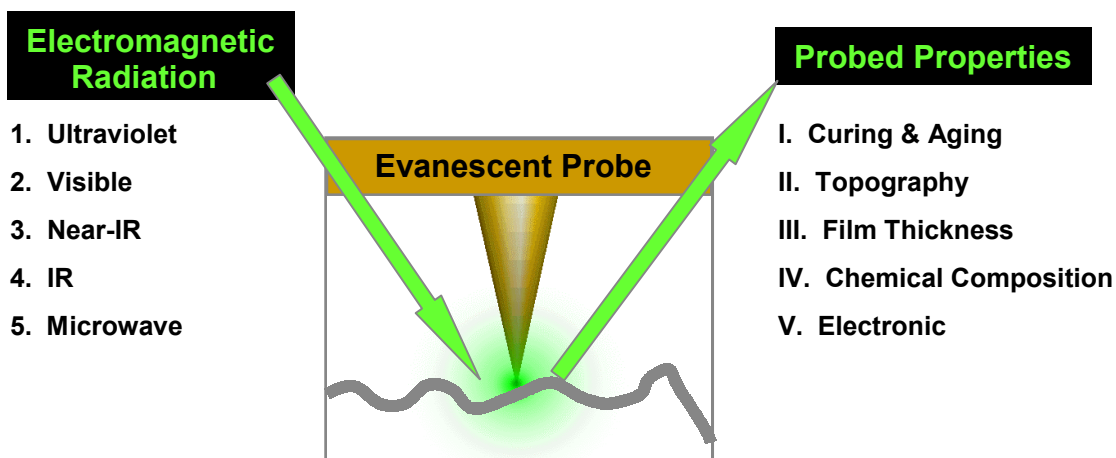
- The challenge is to determine (screen) compositional, structural, and performance characteristics of diverse samples in a time efficient fashion: need to measure in a day what you can make in a day

- Research Strategy

- The objective of our research is to develop microscopy methods for the simultaneous chemical, electrical, optical, and physical analysis of chemically textured libraries. Our approach will be to develop ultra-broadband scanning evanescent probe microscopy and spectroscopy, with the ability to simultaneously measure the topographic structure, dielectric/electrical properties, chemical composition, tribology, optical properties as well as other compositional and performance properties. This multitasking capability will provide a means of overcoming screening bottlenecks while still providing the essential information that is needed to take full advantage of high-throughput experimentation and discovery.

- Research Highlights

- Current research efforts have focused on demonstration of various contrast mechanisms that provide the needed composition and performance measurements. We are moving many chemical and spectroscopic diagnostics to smaller length scales ($< 100\text{nm}$), higher sensitivity and shorter acquisition times. With one probe structure, a sharpened metal tip, measurements will be made throughout the electromagnetic spectrum (from radio frequencies to ultraviolet) as well as on surface tip interactions (friction and shearing forces).



For more information ...

Stephan Stranick, Richard Cavanagh, Surface and Microanalysis Science Division